

R E M A R K S

The amendment to step (b) of claim 24, that is, "devolatilizing the carbonaceous material until a devolatilized carbonaceous material having a volatile content of less than 10 weight %" is supported in the specification on page 53, line 25 to page 54, line 3.

Enclosed is a MARKED-UP VERSION OF THE AMENDMENTS TO THE CLAIMS.

The features of new claim 42, namely "reducing the ore and devolatilizing the carbonaceous material at a temperature of at least 950°C" and new claims 43 to 46 are supported in the specification on page 69, Table 3, PRF operating condition, Temperature of ore during processing: 950°C, 1000°C, 1200°C and 1250°C.

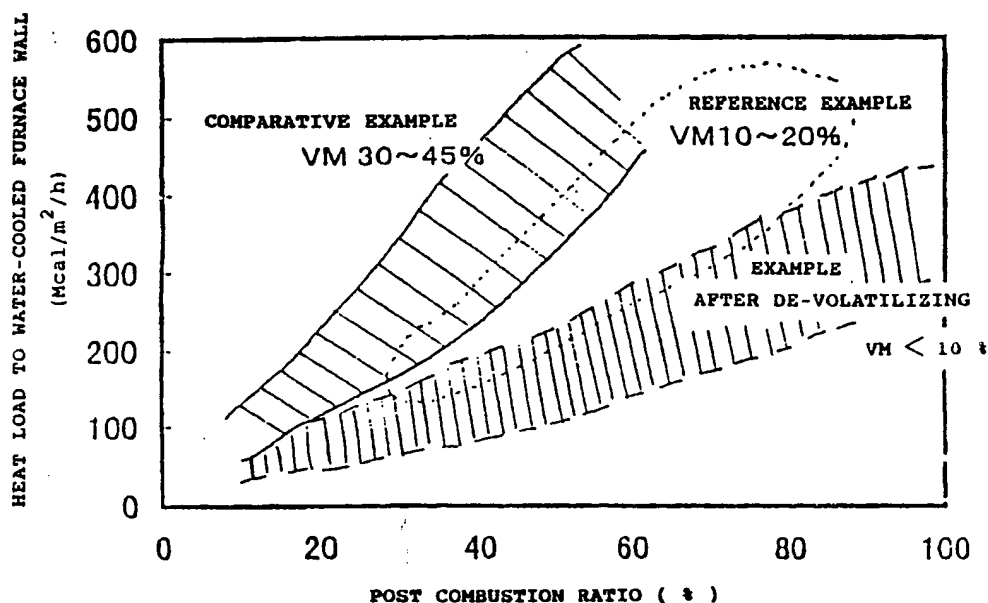
The feature of new claim 47, that is, "reducing the ore comprises reducing the ore until the ore has a metallization of 60% or more" is supported in the specification on page 64, lines 11 to 16.

The post combustion rate of 40 to 80 weight % recited in new claim 48 is supported in the specification on page 64, lines 7 to 10.

As discussed above, the present claim 24 recites devolatilizing the carbonaceous material until the volatile content of the carbonaceous material is less than 10 weight %.

As shown in Fig. 7 in the present application, when the volatile content (VM) in coal is devolatilized until less than 10 weight %, the influence of the post combustion over the heat load of the furnace wall within the smelting reduction furnace is decreased until half of the comparative example.

Applicants' Fig. 7 is reproduced as follows:



Accordingly, the post combustion ratio can be operated 40% to approximately 80% without so much inviting of heat loss, and it is possible to lower the net unit of coal, the net unit of oxygen and the cost of equipment (see the present specification on page 64, lines 1 to 10).

Claims 24 to 26, 38 and 41 were rejected under 35 USC 103 as being unpatentable over Satchell, Jr. (USP 5,938,815) for the reasons set forth in the paragraph bridging pages 2 and 3 of the Office Action.

It was admitted in the Office Action that Satchell, Jr. does not explicitly disclose that the high-purity oxygen feed 14 may be a gas containing 20% or more of oxygen.

Claims 27 and 39 were rejected under 35 USC 103 as being unpatentable over Satchell, Jr. and further in view of JP 6-271919 for the reasons set forth in the paragraph beginning on page 3, line 7 of the Office Action.

It was admitted in the Office Action that Satchell, Jr. does not disclose a rotary kiln as a secondary reactor for reducing iron ore.

Claims 27 and 40 were rejected under 35 USC 103 as being unpatentable over Satchell, Jr. and further in view of Kundrat (USP 5,567,224) for the reasons set forth in the paragraph bridging pages 3 and 4 of the Office Action.

None of the cited references teach or suggest that the advantageous results afforded by the presently claimed invention, wherein the heat load of the furnace wall within the smelting reduction furnace can be lowered and the post combustion ratio can be increased.

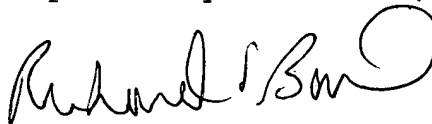
It is therefore respectfully submitted that the applicants' claimed invention is not rendered obvious over the references, either singly or combined in the manner relied upon in the Office Action, in view of the distinctions described hereinabove. It is furthermore submitted that there are no teachings in the references to combine them in the manner relied upon in the Office Action.

Reconsideration is requested. Allowance is solicited.

Submitted concomitantly herewith is a REQUEST FOR INITIALED COPIES OF FORMS PTO/SB/08A and PTO/SB/08B.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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Encs.: (1) PETITION FOR EXTENSION
(2) MARKED-UP VERSION OF THE AMENDMENTS TO THE CLAIMS
(3) REQUEST FOR INITIALED FORMS PTO/SB/08A and PTO/SB/08B



MARKED-UP VERSION OF THE AMENDMENTS TO THE CLAIMS

24. (Twice Amended) A smelting reduction method comprising:

(a) charging a carbonaceous material and an ore into a reacting furnace to directly contact the carbonaceous material and the ore;

(b) reducing the ore until at least a part of the ore is metallized, the resultant reduced ore containing at least a part of the metallized metal being produced, and devolatilizing the carbonaceous material until a devolatilized carbonaceous material having a volatile content of less than 10 weight % is obtained;

(c) charging the devolatilized carbonaceous material and the ore containing at least a part of the metallized metal from step (b) into a smelting furnace having a metal bath; and

(d) blowing a gas containing 20% or more of oxygen into the metal bath in the smelting furnace to produce molten iron.